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GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

The Society's Map Exhibit. A set of economic maps was on exhibition in June in the Society's main hall. The exhibits included excellent maps by leading map makers in various countries. Fundamental facts such as natural resources, great trade routes, etc., affecting industry and commerce are illustrated on these maps. The sheets included "Osbahrs Wandkarte zur Wirtschaftsgeographie der Welt" and "Bambergs Wandkarte zur Kultur- und Wirtschaftsgeographie von Nord- und Mittel-Amerika," both published by Chun in Berlin, the economic sheets of Philip's "Comparative Wall Atlases," representative wall maps from the set edited by Vidal de la Blache, published by Colin in Paris, economic maps published by the United States and Canadian governments, the important commercial and industrial map of European Russia issued by the Ministry of Commerce and Industry in St. Petersburg, and sheets selected from the "Documents Cartographiques de Géographie Economique," published by Messrs. Kümmerly & Frey of Berne. These maps give an idea of the wide range of economic topics which can be represented cartographically.

NORTH AMERICA

Studies in the Yosemite Region. Messrs. F. E. Matthes and F. C. Calkins of the U. S. Geological Survey have returned to the Yosemite region, in California, to resume the geological and geographical studies they began last year. These studies are being made, in part, for the immediate purpose of securing data for a popular yet elaborate account of the mode of origin of the Yosemite Valley, to be published by the U. S. Geological Survey at the time of the Panama-Pacific Exposition next year. In part, also, they are to form the ground work for further research into the geological history of the Sierra Nevada.

Mr. Calkins is devoting himself to detailed petrological and structural studies, while Mr. Matthes is investigating the physiographic problems of the region, more especially those bearing on the evolution of the Yosemite Valley.

The Relief Model of the Yosemite Valley. A large relief model of the Yosemite Valley is being constructed at the Office of Public Roads in Washington for the government exhibit at the Panama-Pacific Exposition in 1915. It is twelve feet long, six feet wide and carries relief to a height of 18 inches. The vertical dimension is not exaggerated, and as a consequence all features are shown in their correct proportions. Indeed, so rugged is the topography of the Yosemite Valley, that any increase in the vertical scale would have resulted in a peculiar, distorted appearance of the great cliffs, domes and spires.

The model is being executed, with painstaking exactness, by an expert model maker, and is based upon the detailed topographic map of the Yosemite Valley, prepared in 1905-06 by Mr. F. E. Matthes of the United States Geological Survey. Portions of this map were enlarged photographically to five times the original scale, that is, to a scale of 400 feet to the inch. The contour lines then were used as patterns for the sawing out of thin wooden boards. These boards were built up in layers and the rough form thus obtained was plastered over with a special preparation of great durability that will bear transportation across the continent.

Large numbers of photographs are being used for local details, and a special effort is being made to reproduce with fidelity the peculiar cliff sculpture which is so prominent a factor in the Yosemite landscape. Inasmuch as these sculptural forms are intimately associated with the lines of structure in the granites in which the valley lies hewn, the model promises to become an unusually fine medium for the study of these relations of form to structure. Students of geology and geography will therefore, in all likelihood, find it an object worthy of a special visit at the San Francisco Exposition. Explanatory legends will be placed on the sides of the case at various places, directing attention to the most interesting features.

In order to heighten the sense of reality, small streams of water, blown to spray by atomizers, will represent the water falls.

New Slips Along the Fault that Produced the California Earthquake of 1906. This great earthquake, as is known, originated in a movement along the San Andreas fault-rift extending over a distance of 290 miles. Since that year, three slight earthquakes have been traced to slips along the same fault. The first on September 12, 1912, occurred near the south end of San Francisco Bay; the second on October 25, 1913, to the northwest of Berkeley; the third, on January 23, 1914, in an intermediate position close to San Bruno. The epicenter of the last earthquake was determined by Mr. E. F. Davis (*Bull. Seis. Soc. Amer.*, Vol. 4, pp. 25-28) by means of Omori's formula for local shocks, from the duration of the preliminary tremors at the Lick, Santa Clara, and Berkeley observatories.

San Francisco Meeting of the American Association for the Advancement of Science. The American Association will hold a meeting in San Francisco and vicinity on the occasion of the Panama-Pacific International Exposition next year. The meeting will begin on Monday, August 2, and terminate on Saturday, August 7. The general sessions and general evening lectures will be delivered in San Francisco. Addresses and papers in the separate divisions of science will be read chiefly at the University of California, Berkeley, with one day's session at Stanford University. The Pacific Committee on scientific programme suggests that as this meeting will be, in a manner, a part of the celebration commemorating the opening of the Pacific to the peoples bordering the Atlantic, it seems fitting that the programme of meetings should relate as far as possible to problems of world interest which pertain especially to the Pacific area.

Live Stock Among our National Forests. *American Forestry* (Vol. 20, 1914, No. 6, pp. 436-437) says the Secretary of Agriculture has authorized grazing permits for the ranges in the 160 national forests during the present year. Nearly 11,000,000 animals can be grazed, including nearly 2,000,000 head of cattle and horses, nearly 9,000,000 herd of sheep and goats and about 65,000 hogs. For several years the carrying capacity of the national forest ranges has been slowly rising. This indicates an improvement in general grazing conditions and better utilization of the forest resources.

Common Minerals and Rocks. The Colorado State Geological Survey has issued Bulletin 6, ''Common Minerals and Rocks; Their Occurrences and Uses,'' by R. D. George, in which the commoner minerals and rocks are described and the means of recognizing them and knowing their uses are supplied. The handbook presents in usable form the important facts regarding the materials of geology with emphasis on the most useful minerals and rocks. While the book especially applies to minerals found in Colorado, it will doubtless have wide usefulness outside of the state.

Notes from our Coal and Oil Fields. According to the *Press Bulletins* of the U. S. Geological Survey, the production of anthracite again broke the record in 1913, exceeding the highest previous output by nearly 1,000,000 tons. The production was 81,718,680 long tons, valued at $195,181,127, compared with 75,322,855 tons, valued at $177,622,626 for 1912. This is an increase of over 6,000,000 tons in quantity and more than $17,500,000 in value. The previous highest record was 80,771,488 long tons, in 1910.

All previous records in the coal production of Ohio were exceeded in 1913 both in quantity and value, although coal-mining operations, like other industries of the state, were seriously interfered with by the unprecedented inundation in March and April of that year. The production increased from the previous maximum output of 34,528,727 short tons in 1912, to 36,200,627 tons in 1913, a gain of 1,671,900 tons. The increased value was $2,864,695, from $37,083,363 to $39,948,058.

With a production last year of 70,000,000 tons of coal, West Virginia takes second rank among our coal-producing states. The increased production was well distributed over the state, there being but three counties out of thirty in which there was a decline in output.

During 1913 the Appalachian oil field, embracing New York, Pennsylvania, West Virginia, southeastern Ohio, and Kentucky, showed a slight decline—1.72 per cent.—in the production of petroleum, falling from 26,338,516 barrels in 1912 to 25,885,640 barrels in 1913, a decrease of 452,876 barrels.

Pueblo Indian Maize and the Climate of the Southwest. One of the most important agricultural problems in the United States is the selection and cultivation of the varieties of cereals which are best adapted to our arid regions. Along these lines of investigation our Department of Agriculture has been doing excellent work in recent years. Mr. G. N. Collins, of the Bureau of Plant Industry, in a recent article on ''Pueblo Indian Maize Breeding'' (*Journ. of Heredity,* Vol. V, June, 1914), points out that the pioneer work of the Hopis and Navajos along agricultural lines has not been sufficiently appreciated, and that many of the facts which we have ascertained by laborious experiment we might have learned by studying the agricultural practices of our own Indians. From prehistoric times, our southwestern agricultural Indians have raised maize successfully in regions where drought, and especially the absence of spring rains, render impossible the growth of many of the common varieties of Indian corn. The peculiar features of the corn used by these Indians is (1) a greatly elongated mesocotyl which permits deep planting, and (2) the development of a single large radicle which descends rapidly to the moist subsoil and supplies water during the critical seedling stage. Thus the long experience of our Indians with the peculiar climatic environment of their own southwestern ''desert'' gives us something which we, with all our modern experimental methods, have only discovered slowly and with difficulty.

R. DEC. WARD.

The Meteorological Effects of City Smoke. Professor H. H. Kimball, of the U. S. Weather Bureau, has for some years been studying atmospheric transparency in relation to solar radiation amounts, and other effects. Recently he has devoted himself to the city smoke problem. Some results of his work are given in a contribution entitled ''The Meteorological Aspect of the Smoke Problem'' (*Monthly Weather Review,* Jan., 1914). City fogs are found to be more persistent than country fogs, chiefly because of their increased density, which is due to the smoke that accumulates in them. Hence there are fewer hours of bright sunshine in city than in country. In London, in the clear part of a winter day, the average limit of visibility does not exceed half a mile. It averages about 1½ miles in Pittsburgh, and this is less than one-tenth of the average visibility in the open country around Pittsburgh. The chemical action of light in smoky cities is 40 per cent. less than in the open country, and over 20 per cent. less on smoky days than on comparatively clear days. Minimum temperatures are higher in city than in country. This is due to city heating, in part, and in part also to the blanketing effect of the smoke, which prevents the escape of heat at night. R. DEC. WARD.

Mr. J. B. Tyrrell's Hudson Bay Exploring Expedition, 1912. The report of this expedition appears in the Twenty Second Report of the Ontario Bureau of Mines, 1913. Mr. Tyrrell was instructed to go to Port Nelson, at the mouth of the Nelson River on Hudson Bay, to select the lands and water front to which Ontario was entitled under the agreement with Manitoba, to survey these lands, and to collect all information possible about the strip of country within 50 miles of Hudson Bay and extending from the southeastern bank of the Nelson River to the western boundary of Ontario. Finally, he was to return home through that part of Keewatin that had been added to Ontario as the District of Patricia, and to learn all he could about its resources and possibilities. He was accompanied by Professor Lewis B. Stewart, of the University of Toronto, as surveyor, Mr. W. B. McPherson, as assistant surveyor and also chainman, and by Indian canoemen. The party started down the Nelson from Norway House, at the north end of Lake Winnipeg, in three canoes. Tyrrell reached Hudson Bay by way of the Nelson and Hayes Rivers, and a large-scale survey of the latter stream was made by Professor Stewart below the junction of the Shamattawa River. A frontage of ten miles on the east side of the lower Nelson, to which Professor Stewart's survey was extended, was marked out with posts and mounds. This is the tract that is to belong to Ontario. A suitable crossing of the Hayes River for the plateau railroad was not found until the party arrived at thirty-three miles above its mouth.

The District of Patricia was so little known that Mr. Tyrrell's work there may be regarded as original exploration. He says the district is a fairly distinct physiographic unit, the rocky granitic plateau, about 1,500 feet high, constituting its highest portion. From this plateau, the district slopes gently southward to Lac Seul and numerous lakes fill the depressions in its rocky surface. Northward, the slope is steeper and here the rock basins are filled chiefly with glacial clays and other surface deposits, a number of lakes occupying depressions in them. This northern country is very new geologically and, as there are no well marked valleys, large areas, having almost no drainage, are covered with peat bogs. The timber supply is not large. A considerable number of Crees and Ojibways are scattered over the district making their staple food of fish. The country at present is uninviting, but, with drainage, it seems to offer agricultural possibilities if the climate, of which little is yet known, is suitable. An extended account of the main rivers and an outline of the geology complete the report.

Revelstoke National Park. The Canadian Government has set aside as a National Park an area of ninety-five square miles in the vicinity of Mt. Revelstoke, on the line of the Canadian Pacific Railway, to be known as the Revelstoke National Park.

Glacial Geology in Canada. The study of the glacial history of the Great Lakes has long needed the correlation of beach levels, not only with outlets, but also with the terminal moraines which mark the positions of ice dams. Progress in this direction has slowly been made in the United States and in Canada. However, the director of the Canadian Geological Survey has recently had F. B. Taylor at work on the glacial deposits north of the international boundary (The Moraine Systems of Southwestern Ontario, *Trans. Canadian Institute*, Toronto, 1913, pp. 1-23.) Taylor shows that, during its recession, the ice was molded into pronounced lobes (a) in the Erie-Ontario and (b) in the Lake Huron basin. The shapes of these lobes at various stages are now defined with considerable accuracy. It begins to look as if stagnant ice lobes, and perhaps even isolated ice blocks, did develop in the basins of the Great Lakes. Besides these two main lobes, a third was subsequently developed in the Lake Simcoe region, east of Georgian Bay. Between the three lobes was an oval area, extending over 100 miles northeast and southwest between Collingwood and London, Ontario. This is designated as Ontario Island. It was uncovered a long time before the Erie and Huron lobes to the southwest had separated, perhaps existing a large part of the time before and during the Maumee and initial Lake Whittlesey stages. Although at one time completely ice-covered, it was more like the Driftless Area of Wisconsin and adjacent states in its origin than the nunataks of the borders of the Greenland ice sheet, for it was deglaciated not because of being high, but because the adjacent lake basins caused the lobate ice sheet to shrink from it rather early in the period of their recession.

From this detached, ice-free area of Ontario Island, Taylor assumes that a great sub-glacial stream flowed along a crease between the Erie and Huron lobes. Presumably this had much the same relationships as the present Yahtse River between the Guyot and Agassiz lobes of Malaspina Glacier. That it should have emerged as a clear-water stream, as Taylor assumes, seems doubtful.

The several terminal moraines, shown on a good general map, are described in some detail. The waterlaid moraines were lower, smoother, and weaker than those deposited on the land. Some of the latter rise one hundred feet above the adjacent region and are one to three miles wide. The Oak Ridges moraine, north of Lake Ontario, seems to be an interlobate deposit between the Ontario and Simcoe lobes. One of the greatest needs in the glacial geology of North America is the exploratory mapping of the terminal moraines north and east of this area, where Taylor's excellent work establishes a splendid beginning which some of the Canadian geologists may well follow up.

LAWRENCE MARTIN.

CENTRAL AMERICA AND WEST INDIES

A Scientific Study of Porto Rico. The New York Academy of Sciences has begun a scientific study of the island of Porto Rico along the lines of geology, paleontology, zoology, botany, anthropology, and oceanography. With the assistance of a friend, the academy has voted to expend $1,500 a year for five years on this work, and cooperation with the academy has been assured by the American Museum of Natural History, the New York Botanical Garden and by scientific departments of Columbia University, New York University and other institutions. Furthermore, on account of the representations made by the academy through its representatives, Professors Henry E. Crampton and N. J. Britton, the insular government of Porto Rico has made an appropriation of $5,000 toward the work for the fiscal year beginning July 1, 1914, with the expectation that this appropriation would be repeated on each ensuing four years.

The committee having the work in charge consists of Professors N. L. Britton, James F. Kemp, Franz Boas, C. L. Poor and H. E. Crampton. In furtherance of the project Professor Crampton visited Porto Rico in December and January and Professor Britton and Dr. Lutz in January and February last, and the work is now well under way. Some of the aspects of the work are as follows:

Geology: The geological portion of the scientific study of Porto Rico will be begun this summer by Prof. Charles P. Berkey, of Columbia University, who expects to sail for Porto Rico about the middle of August and to spend a month in reconnaissance work on the island. He will probably be accompanied by some other member of the New York Academy of Sciences. Next winter and in subsequent seasons the details of particular sections will be elaborated by other workers, and the mineral resources will be specially studied. Particular attention will also be directed to the fossiliferous strata.

Zoology: The work was begun in January, when Professor Crampton completed a reconnaissance of the island in order to map out the different ecological regions for further intensive study. Dr. Frank E. Lutz was a member of Professor Britton's party which investigated the islands of Desecheo and Mona, as well as certain areas of the main island. His collections comprise 10,000 insects and notable series of land molluscs and other forms. During the present summer Mr. Roy W. Miner will begin the detailed investigation of the invertebrates of the shores and estuaries, especially those of the harbors of San Jüan, Ponce, Mayaguez and Vieques. The coral reefs off the southern and western shores will also receive attention. Mr. John T. Nichols will begin the collection and study of the fishes of the same region, working with Mr. Miner so as to correlate the studies in these two fields. Entomology will be in the hands of Messrs. H. D. Barber, F. B. Watson, and Charles W. Leng. They will study intensively certain characteristic regions mapped out by Professor Crampton and Dr. Lutz. The entomologists of government institutions are cooperating with the survey in this department of activity.

Botany: Several of the members of the scientific staff of the New York Botanical Garden have given much time to Porto Rico, and the results of their labors will be used in further research there by them. Dr. Britton visited the island in January and is going there again in August. The field work will be directed more especially to a study of the fungi and the lichens. Much attention will also be devoted to the reforestation of portions of the island, a subject which vitally concerns the welfare of the colony.

Anthropology: No definite assignments have yet been made, but it is hoped to include this branch in the investigation. Although the ethnology of the present inhabitants will be studied, attention will be more particularly devoted to archæology, especially the examination of anciently inhabited caves and the scientific working over of the kitchen middens.

Oceanography: The oceanographical work can also not be carried out immediately. The plans, however, have already been worked out. They include both physical and biological investigations. The physical investigations comprise a study of the tides and of the ocean currents in the neighborhood of Porto Rico, and the biological, deep sea dredging for animal life. For these two branches of oceanographical work it is hoped to send out a specially equipped vessel.

The specimens which are collected will eventually find lodgment in the American Museum of Natural History, except for the "first set" of duplicates. These will be deposited with the authorities of Porto Rico for the inauguration of an insular museum, and the academy's investigators will take particular pains to insure the good quality and extent of this series (*Science,* June 19, 1914, pp. 896-898).

SOUTH AMERICA

The Argentine Instituto Geográfico Militar. The annual report of this institution contains the account of operations for the year 1913. Its text supplements the data submitted in the first volume, recorded in the *Bulletin* (Vol. 45, 1913, No. 3, p. 199). In accordance with the plan for the extension of geodetic operations throughout the country, field work was carried on in the Provinces of Santa Fé and Corrientes as well as in the Neuquén Territory. The Institute is working in close cooperation with various departments in many of the Argentine provinces in order to accelerate its survey operations.

A working arrangement between the Argentine Hydrographic Office and the Instituto Geográfico Militar provides for the extension of triangulation of the first degree to the coast and the tying of coast surveys undertaken by the Argentine navy to the inland network determined by the Institute staff. Photographic surveying was employed extensively. A map in 1:25,000 of Campo General Belgrano and environs, in the vicinity of Salta, was compiled by this method. The data for seven standard sheets of the topographic map of Argentina on this scale were obtained in this manner. A number of maps on various scales were also published, mainly for military purposes. Progress in the publication of the Argentine sheets of the "Carte internationale du monde au millionième" was delayed pending the settlement of details relating to the execution of the sheets.

Rainfall of Southern South America. In extra-tropical South America there are two great currents of air, one northeasterly, from the tropical Atlantic; the other westerly, from the temperate Pacific. Each of these currents precipitates much moisture as orographic rainfall near the coast, and descends on the lee side of the mountains with a considerably diminished vapor content. The northeast current, even after supplying a heavy rainfall on the Brazilian coast, penetrates the continent as a damp wind, the mountains in its path being low, and its capacity for vapor being large. The westerly current from the Pacific loses most of its moisture on the Chilean slopes of the Andes, and on the western Patagonian highlands. The former current supplies moisture for the rainfall of Uruguay, southern Brazil and northern Argentina, and over the narrow strip of the Andean highlands of northern Chile where snow and rain occur. The latter current supplies all of Chile with the above exception, and the western half of Patagonia. Between the Atlantic and Pacific rainfall regions there is a semi-arid strip like a long narrow wedge, with the point on the east coast near latitude 48° S., and the base in the extreme north of Chile. The central line crosses the Andes in about latitude 33° S. In this region the rains which do occur affect very limited areas, and are due to purely local disturbances of the atmosphere (H. L. Solyom: "The Rainfall of Southern South America," *Symons' Met. Mag.*, Apr., 1914).

R. DeC. Ward.

AFRICA

Stanley's Chronometer. When Henry M. Stanley completed his exploration of the Congo River he presented the chronometer that helped him to determine positions along his route across the continent to General Strauch, who was later very prominent in the Government of the Independent Congo State. Some time ago, General Strauch presented this interesting souvenir of Stanley's most famous explorations to Mr. A.-J. Wauters, the founder and editor of *Le Mouvement Géographique*, which, for thirty-one years, has supplied the most authoritative and comprehensive record of exploration and progress in the Belgian Congo. Mr. Wauters has long been famous as one of the two or three leading writers on this part of Africa and the many papers from his pen that have appeared in the journal he founded are, to this day, most valuable sources of information relating to this vast and growing colony of Belgium.

ASIA

Dr. F. de Filippi's Asiatic Expedition. The *London Times* prints an extract from a letter written by Dr. De Filippi on March 22 giving some details of the work he proposed to do during the past spring. Writing from Leh, Cashmere, he says he had been there since March 2 arranging for the difficult work of transporting his stores over the Chang La (18,300 ft.) to the Shyok Valley. His party had already done good work that will modify existing ideas as to the construction and geological history of the upper Indus Valley. Many fine photographs had been secured. In April a number of his men were to go to the Rukshu Plains to make gravity observations and he himself intended to proceed to Shyok to arrange for transporting stores to the Dipsang Plains.

AUSTRALASIA AND OCEANIA

Extending British Influence Over the Territory of Papua. The Annual Report of the Government of the Commonwealth of Australia for 1912-1913 on the Territory of Papua, the British possession in New Guinea, says that the scheme for the extension of government influence over the territory has been initiated by the selection of sites on the Fly River and in other regions for government stations. The western part of the territory presents the greatest problem because as yet it is so little known. The object is primarily to put an end to cannibalism, head-hunting and other horrors, the existence of which, it is felt, is a disgrace to an Australian territory. Incidentally it will increase the number of laborers available for employment, but the suppression of crime is the principal object.

EUROPE

Earthquake in Sicily. An earthquake occurred on the southeast flank of Mt. Etna on May 8. It was a strong example of the local shocks often felt within the limits of Etna. For thirteen days slight tremors had given warning and, but for this fact, the loss of life might have been much greater. Over 150 persons, however, were killed and about 500 injured. The villages of Linera, Passapomo, Pennisi and Zerbati were completely ruined and fifteen other villages were half destroyed or seriously damaged.

Mr. C. Davison, writing in *Nature* on this earthquake (May 14, 1914, pp. 272-273), says that the same phenomena seem to characterize all the earthquakes of this district. ''The disturbed area is small, the intensity of the shock great in its central portion, and the isoseismal lines extremely elongated in form. In some case the axes of the isoseismal lines are directed towards the central crater; in others (as in the earthquake of 1911) in a perpendicular direction. The small depths of the foci, their situation within the Etnean boundary, and the close connection of many of the earthquakes with eruptions of Etna—all these phenomena point clearly to the volcanic origin of the earthquakes, their immediate cause being probably local slips along radial and peripheral fissures.''

Exhausting Russia's Forest Resources. Russia has been commonly reputed to be a country of limitless forests. Last winter, however, the Russian wood famine was so severe that even Moscow suffered from it and some public and charitable institutions were insufficiently heated. The present conditions are narrated for the St. Petersburg *Novoye Vremya* by Mr. Menshikov and a part of his paper has been translated by the *Literary Digest.* He says that, for decades, Russia took no notice of the destruction of the forests. The ruling class, the nobility, sold large parts of their wooded properties rather than sell farm land. Their forests were usually sold for small sums giving the brokers an opportunity to earn 300 to 1,000 per cent. on their capital. In the end the deforestation of the country assumed threatening proportions and the Government finally introduced a forest conservation law. ''But . . . the destruction of the forests even now goes on in full blast. The forests which guard the very possibility of man's existence in the north are rapidly disappearing. Firewood is just as vitally necessary to Russia as the sea is to the English and the mountains to Switzerland. One may regret the disappearance of timber, but that can in a large degree be replaced by brick, iron and other construction materials; but fuel in the north, in the form of firewood, cannot be replaced.''

Proposed National Oceanographical Institute in Scotland. A movement for the foundation of a Scottish Oceanographical Institute in Edinburgh, to be a memorial to the late Sir John Murray, was inaugurated in the rooms of the Royal Society, of that city, on May 26. The chair was occupied by Prof. James Geikie and among others present were Prof. Sir Edward Schäfer, Dr. W. S. Bruce, Dr. J. G. Bartholomew, Dr. John Horne and others. A resolution that ''A permanent foundation of an Oceanographical Institute in the capital of Scotland is highly desirable'' was proposed by Professor Geikie and discussed.

Dr. Geikie said that in the Challenger office was housed the finest collection of deep sea deposits in the world. There also were Sir John Murray's extensive library of oceanographical works, probably the best of its kind in Great Britain, and the working machinery in connection with the geological and physical departments of oceanography. Dr. Bruce, on the other hand, had established the Scottish Oceanographical Laboratory at the Surgeons' Hall which contained a large collection of Arctic and Antarctic marine fauna besides collections from the North and South Atlantic Oceans and other seas, as well as what was probably the most complete library of works dealing with the Antarctic. The oceanographical work of Sir John Murray and Dr. Bruce may be said to be complementary, for while the former concentrated more particularly on deep sea deposits and the physics of oceans and lakes, the latter devoted himself more especially to the biological side of oceanographical science. It seemed highly desirable, therefore, that advantage should be taken of the presence of two such well-known laboratories in Edinburgh and that, if possible, they would be conjoined so as to form a permanent oceanographical institute in Scotland. Under Dr. Bruce's charge, this would be a most suitable memorial to his former teacher, Sir John Murray.

A committee was formed for the purpose of considering how such an institution may best be organized, with power to issue an appeal for funds. The members of the Committee include Lord Stair, President of the Royal Scottish Geographical Society, Prof. James Geikie, President of the Royal Society of Edinburgh, J. Y. Buchanan, of the Challenger Expedition, Dr. W. S. Bruce and others. (Condensed from *The Scotsman,* Edinburgh, May 26, 1914.)

POLAR

ANTARCTIC

The Scottish Antarctic Expedition. *Nature* announces (Vol. 93, April 30, 1914, pp 218-219) that the British Government has refused to honor the application for $19,000 to complete the publication of the scientific reports of the Scottish National Antarctic Expedition of 1902-1904. The application was refused though supported by a very influential body of Scottish scientific opinion. The expedition was entirely equipped by money privately raised in Scotland, though mostly due to the generosity of Messrs. J. and A. Coats. This was the expedition led by Dr. W. S. Bruce, the distinguished polar explorer. His discovery of Coats Land is generally recognized as one of the most important additions to our knowledge of the boundaries of the Antarctic Continent. It added a half million square miles to previous estimates of the area of the continent and settled the position of the coast in the one part where there was no clue to its situation. Its collections and oceanographical observations were of the highest importance. Five volumes of its scientific results have been published and three others have been arranged for by a grant previously made by the Government. Four more volumes are required to complete the series. These volumes were to be devoted mainly to description of the biological collections and memoirs which have already been prepared by many distinguished British and foreign naturalists. Much confusion in biological nomenclature may be produced if the publication of these reports be delayed, so that they fail to appear simultaneously with those prepared from the collections of later expeditions. *Nature* expresses the hope that the Government will reconsider its action.

Shackleton in Norway. Sir Ernest Shackleton with nine members of his expedition have been spending some time in Norway to test provisions and motor sledges for his forthcoming Antarctic expedition.

PHYSICAL GEOGRAPHY

Isostasy and the Size and Shape of the Earth. Mr. William Bowie, of the U. S. Coast and Geodetic Survey, read a paper with this title at a meeting of the American Association for the Advancement of Science at Atlanta on Dec. 29, 1913. It is thus summarized in *Science* (June 12, 1914, p. 882):

"The determination of the size and shape of the earth would be a simple matter if its geoid or sea-level surface formed a geometrical figure, but, as it does not, the actual problem is a difficult one. These deviations, it was shown, are due to differences in the vertical distribution of mass in adjacent isostatic regions. When corrections for the effects of topography and isostatic compensation are applied to the astronomically observed positions the deviation of the geoid from the spheroid surface is largely eliminated.

"The shape but not the size of the earth may be determined from the observed values of the force of gravity at stations widely separated in latitude. Here again a correction for topography and isostatic compensation is necessary for the best results. Absolute values of gravity can be obtained only with a long series of observations, and therefore nearly all gravity determinations are made by the relative method. Those of the Coast and Geodetic Survey are based on the absolute value at Potsdam.

"Investigations made by the U. S. Coast and Geodetic Survey during recent years show that the area of the United States, taken as a whole, is in a state of perfect isostasy, and that areas of limited extent deviate only slightly from that state. The paper will later appear in full.''

PHYTOGEOGRAPHY AND ZOOGEOGRAPHY

The Journal of Ecology. This is a new periodical published quarterly by the British Ecological Society and issued from the Cambridge University Press. The first number appeared in March, 1913. The aims of *The Journal* are twofold: ''As the organ of the British Ecological Society, it will endeavor to foster and promote in all ways the study of ecology in these Islands. In the second place, it will endeavor to present, by critical reviews and articles, by full notices of recent ecological publications, and by full lists of current ecological literature, a record of and commentary on the progress of ecology throughout the world.''

Most of the space is given to reviews of the literature of ecology. An article on Raunkiaer's ''Life Forms'' and statistical methods is of especial interest and characterizes the first number. Raunkiaer proposes to limit the domain of geographical botany to ''that geographical science which endeavors to characterize the earth by its climate in so far as this is manifested by the adaptation of plants to the various seasons.'' In other words, the plant itself is taken to be the recorder of the biological value of any climate.

The reviews undertaken by this journal are exhaustive and satisfying. An extensive bibliography of recent literature on ecology is also given. The publication gives promise of filling a long-felt need in a very competent manner.

R. W. Sharpe.

ECONOMIC AND COMMERCIAL GEOGRAPHY

The Panama Canal and World Trade. The economic effects of the Panama Canal have already been much discussed. The *Scottish Geographical Magazine* (June, 1914, p. 327) prints a recent note from the London *Times* dealing with a minor point which shows how complex are the conditions that determine the use of a particular route. · The Panama Canal route from New Zealand to Liverpool will shorten the distance by about 900 miles, but the exporters of frozen meat have already decided against using the canal. Ships on the Cape Horn route traverse a long stretch of cold water between New Zealand and the cape, and thence strike almost vertically across the equator. During the passage, the cold storage chambers have to be kept cool, and the higher the external temperature and especially the higher the water temperature, the more power must be expended in the refrigerating process. Ships using the Panama route would cross the equator slantwise, and would be steaming through areas of warm water for a much longer period than at present. It is calculated that, in consequence, the machines would require to be driven for a much longer period each day, and that the increased expenditure on coal, when added to the canal dues and the time spent in traversing the canal, would more than counterbalance the saving due to the lesser mileage. The point is of interest as suggesting that the shortest route is not necessarily the most advantageous route.

Fluctuations in the Yield of Great Fisheries. The Permanent International Council for the Exploration of the Sea has recently issued ''Fluctuations in the Great Fisheries of Northern Europe Viewed in the Light of Biological Research'' by Johan Hjort (*Rapports et Procès-Verbaux,* Vol. 20, 1914, 228 pp., maps, diagrams). The volume is chiefly given to the Norwegian cod and herring fisheries. The introductory paragraph says:

''From the earliest times, a characteristic feature in all branches of the fishing industry has been the fluctuation of the yields from year to year. At the present time, we find the United States complaining of the failure of the mackerel fishery, while in France, a 'sardine crisis' has arisen, the yield of the sardine fishery, which in 1898 amounted to over 50,000,000 kilos, having sunk in 1899 to below 30,000,000, and in 1902 to less than 9,000,000 kilos. The Norwegian fisheries, which more especially form the subject of the present work, have for hundreds of years experienced alternating periods of rich and poor yield. These periodical fluctuations have as a rule been of some considerable duration, a series of years of profitable fishery succeeding and succeeded by several years of dearth. Thus the term: a good (or bad) fishery period has become an expression of common occurrence.''

PERSONAL

Professor W. M. Davis gave a lecture in the town hall at Suva, Fiji, on April 30 on ''The Origin of the Coral Reefs of Fiji,'' in which he presented the chief results of his seven weeks' visit to those islands as a part of his Shaler Memorial study of coral reefs in the South Pacific. On May 1, he left for New Zealand where he expected to spend the month. His plans were to give June and July to his work in New Caledonia and the New Hebrides, to attend the meeting of the British Association in Australia in August and then go to Tahiti, returning to San Francisco on a steamer due to arrive there on October 29.

Professor N. M. Fenneman, of the University of Cincinnati, is engaged, this summer, in work for the Ohio Geological Survey, chiefly in preparing an educational bulletin on the physiography of a part of southwestern Ohio.

OBITUARY

FERNAND FOUREAU. This distinguished explorer of the Sahara and Governor of the colony of Martinique died in February at the age of sixty-four years. He was one of the most potent influences in securing for France her present prominent position in North and West Africa. Beginning in 1882, he made a series of expeditions into the Sahara, during which he covered with a network of routes the Algerian Sahara, from Insalah in the west, to Ghadames in the east, fixing many positions astronomically, determining altitudes and contributing material for a greatly improved map of the entire region. In 1892 he had reached Timassinin, in 1894, the Tassili on the borders of the Azjer country, and he was incessantly pushing his exploratory enterprises until, in 1898, the French authorities despatched him on the largest expedition that has ever been sent across the Sahara. His baggage camels numbered about 1,000 and he was a year in crossing the desert, having met various difficulties and delays, including some opposition from the Tuaregs. He continued his journey to Lake Chad and the Shari River. By this great journey he opened a way across the Central Sahara to the Sudan and greatly facilitated the extension of French supremacy. Besides publishing a popular account of his last great expedition, ''D'Alger au Congo par le Tchad'' (1901), he presented, in three quarto volumes, the complete scientific results of the journey. This work is one of the most important authorities on the geography of the Central Sudan.

THE REV. STEPHEN D. PEET, PH.D. Dr. Peet died at Northampton, Mass., on May 24. He was the founder, editor and manager of the *American Antiquarian and Oriental Journal,* which he established in 1878. In 1910, Dr. Peet brought to a close the thirty-two years of his association with this publication. The American Geographical Society, in 1892, elected him as a Corresponding Member.